


# NUCLEONICA: Decay Engine

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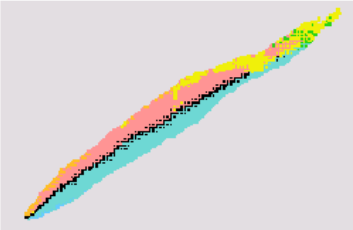
# Nuclear science applications...



## ... web driven nuclear science


Applications My Preferences Help


### > Nuclide Explorer



» Actual Chart: Karlsruhe

### > Search Nucleonica Documentation

 Nuclear Data Retrieval



### > Application Centre

- » ~~Mass Activity Calculator~~
- » Decay Engine
- » Dosimetry & Shielding
- » Range & Stopping Power
- » webKORIGEN
- » Universal Nuclide Chart
- » Transport & Packaging
- » Nuclide mixtures
- » Nucleonica Scripting
- » Library creation for 3rd party software
- » Radiological Dispersion Module
- » Extended Graph Module

### > Data Centre

- » Physical Constants
- » Nuclide Datasheets
- » Nuclide Derived Data
- » Average Cross Sections
- » Radiations
- » Prompt Gamma
- » Fission Yields

### > Knowledge Centre






- » Nuclear News
- » Reading room
- » Useful Weblinks
- » Ask An Expert
- » Element Information
- » Conference Calendar

### Welcome, Joe






[Edit Preferences](#) [Administration](#)

MyCommunity Portal



### > My Last Nuclides

-  90 Th232
-  90 Th231
-  94 Pu239
-  92 U235
-  25 Mn52






### > My Nuclide Mixtures

-  Pu238+daughter (100g @50y)
-  Natural Uranium
-  Cs137 + Ba137m
-  U232+Co60
-  Transuranics in 1 ton Spent Fuel (4.2% enriched, 50GWd/t, 6 years cooling)

### > My Sources


-  Pu239 1 g
-  natu

### > My Messages

-  Thanks!
-  About my group and information
-  Photo Change
-  Open call for JRC Traineeships at the Institute for Transuranium Elements
-  NAML-9 International Conference on Nuclear Analytical Methods in the Life Sciences


» View

### > User Alerts

-  Task completed (DecayEngine: Uranium 238)

» View

# Decay Engine:

 ... web driven nuclear science

ApplicationsMy PreferencesPrintHelp

Co60

10.47 m5.27 y

## Decay Engine

### 27 Cobalt

Current Chart: Karlsruhe

Element: Mass:  

Co60

Nuclide Mixtures Selector

Decay Engine

Options

Quantity:Grams1

Accuracy Factor:1E-02

Time:Years5.26E+01

Number of timesteps:10

Number of chains:

StartStart in backgroundReset

Type of graph:Numbers

# DECAY ENGINE

Decay Engine

Options

Quantity: Grams

1

Accuracy Factor:

1E-02

Time: Years

5.26E+01

Number of timesteps: 20

Number of chains: 1

Start

Start in background

Reset

Show details

Create Nuclide Mixture

Parent+Daughters	Half-life	N(atoms)	M(g)	Ing.Radiot(Sv)
27 Co60	5.27 y	1.00E+19	9.95E-04	142
28 Ni60 Stable	stable	1.00E+22	9.99E-01	0
Total:		1.00E+22	1	142

Download

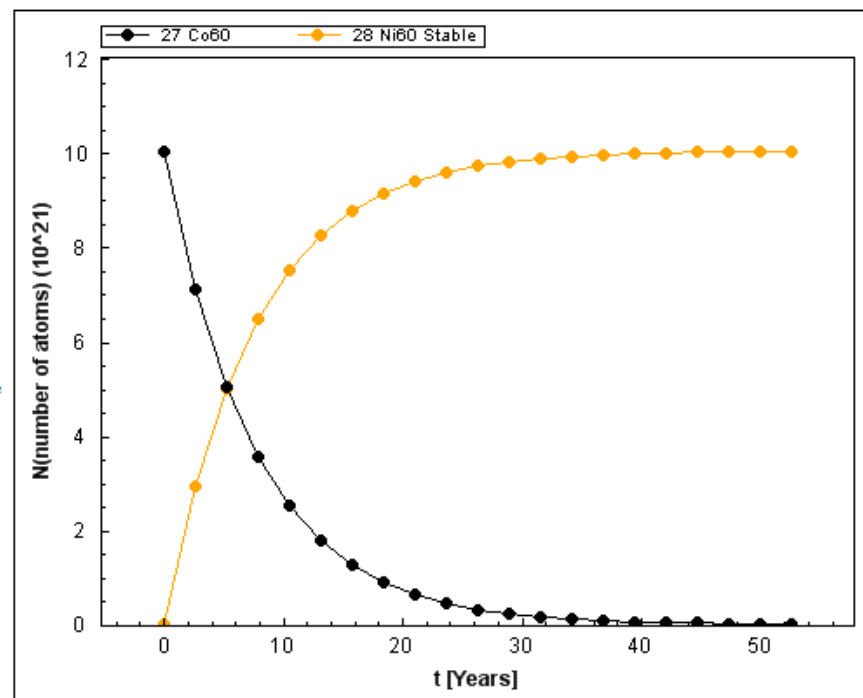


Separator:

Semicolon (;)

☒ Use field qualifier (")

Type of graph: Numbers



- ☒ 27 Co60  
☒ 28 Ni60 Stable  
☐ Total:

Update

# Exercises! Decay Engine

1. At  $t=0$  there are 10 Ci of Sr-90. What will be the activity of Y-90 after 5 years?
2. What is the time required for the activity of Na-24 to diminish to 1% of its initial value?
3. What initial mass of F-18 is required in order that there are 3 mg remaining after 16 hours?

# Exercises! Decay Engine

1. At  $t=0$  there are 10 Ci of Sr-90. What will be the activity of Y-90 after 5 years? Ans. 8.87 Ci
2. What is the time required for the activity of Na-24 to diminish to 1% of its initial value? Ans. 4.13 d
3. What initial mass of F-18 is required in order that there are 3 mg remaining after 16 hours?(1.3g)